

## DATA ANALYSIS AND MACHINE LEARNING FOR PREDICTIVE MAINTENANCE

Scania Productions Zwolle ([www.scania.nl](http://www.scania.nl)) is a lean manufacturer which produces trucks. They assemble 200 trucks per day, each configured to customer requirements. This requires strict control over production, whereby coordination between people and machines is crucial. The uptime is currently 97% which means that 3% of the time no production can take place. The goal of Scania is to increase uptime.



Scania and the Ambient Intelligence research group have joined forces to achieve this goal. Ambient Intelligence (Aml) is a research group of Saxion that focuses on making environments smart, mainly in the areas of safety, sports and smart industry.

For this project we choose a data-driven approach. In this case, we will look specifically at the carrier system that transports the trucks through the hall. The carriers on which the chassis of the trucks rest are controlled by a central PLC (programmable logic controller) and it is critical that these carriers keep on working. At this moment, the carriers are equipped with dataloggers to acquire a lot of detailed data about their behavior during the production runs. The ultimate goal of the project is to create a predictive maintenance model of this carrier.

In this project you will be working for and at Scania and are coached by Saxion the Aml lectorate. Also a close co-operation with the Scania data analysis group in Sweden is part of the assignment.

## TASK DESCRIPTION

Your assignment is to analyze the data and to support the development of an incident prediction model for the carrier system. The first step is to gain an understanding of the context domain and the available data. After that we expect you to describe the data and to explore it by using statistical methods in order to find dependent and independent features. For example, you can compare carrier behavior over time or between carriers. Once you know which features influence the carrier system, you can use it to advise on a prediction model by using multiple data mining and machine learning algorithms. Depending on your study program, you will focus on developing a proper data processing pipeline, incorporating suitable data engineering and evaluation methods to validate the machine learning algorithms, or more on the development of the algorithms themselves.

## PRACTICAL INFORMATION

- **Student profile:** Software Engineering or Applied Computer Science, with a background in (big) data technologies such as machine learning.
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